



Armed Forces College of Medicine AFCM





*Good
Morning.....*





DISEASES OF ENDOCRINE GLANDS

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Diseases of parathyroid gland, Pituitary gland and adrenal gland

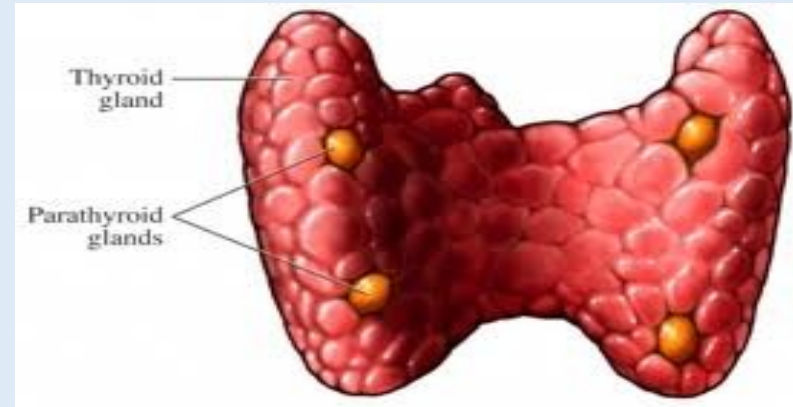


INTENDED LEARNING OBJECTIVES (ILOs)



By the end of this lecture the student will be able to:

1. Determine the aetiology , pathological features and complications of hyperparathyroidism.
2. Describe the pathological features of craniopharyngioma.
3. Classify pituitary adenomas.
4. Describe the pathological features of adrenal gland tumours.



Diseases of Parathyroid glands



Parathyroid gland



Decreased **free calcium** levels stimulate synthesis and secretion of PTH, which has the following effects on **kidneys , Intestine and bones:**

- ✓ Increased renal **tubular reabsorption of calcium**
 - ✓ Increased **urinary phosphate excretion**, thereby lowering serum phosphate levels (since phosphate binds to ionized calcium)
 - ✓ Increased conversion of vitamin D to its active dihydroxy form in the kidneys, which in turn augments **gastrointestinal calcium absorption**
 - ✓ Enhanced osteoclastic activity (i.e., **bone resorption**, **Increase in free calcium level in blood, which inhibits PTH secretion from chief cells**)
- thus releasing ionized calcium), mediated indirectly by



Primary hyperparathyroidism



Aetiology: Hyperfunction of parathyroid glands due to

- ✓ **Parathyroid** Adenoma (**most common**)
- ✓ **Parathyroid** Hyperplasia
- ✓ **Parathyroid** Carcinoma (**rare**)

N.B: Excess production of parathyroid hormone leads to → hypercalcemia (HOW)

Complications

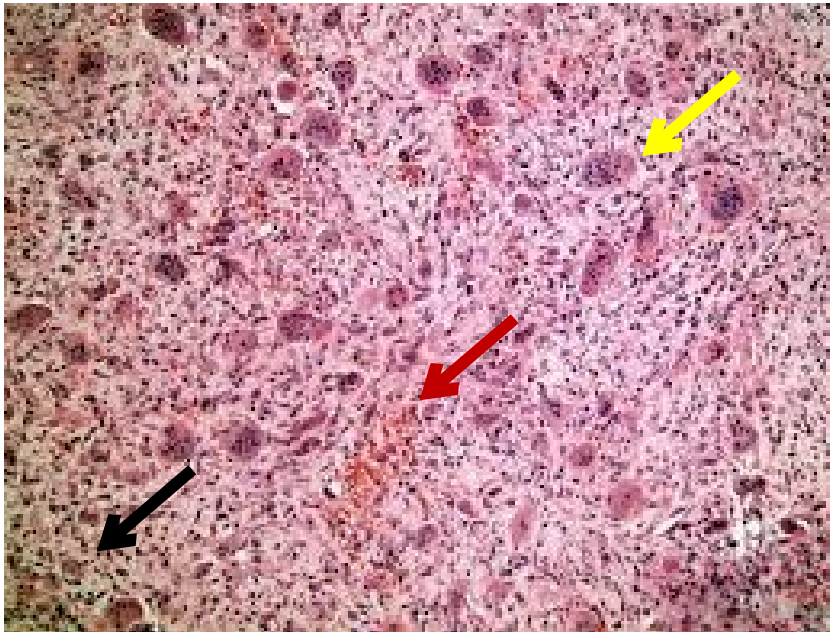
- ☐ Metastatic calcification
- ☐ Renal stones
- ☐ Neurologic changes as depression
- ☐ Osteoporosis and osteitis fibrosa cystica





Osteitis fibrosa cystica or Von Recklinghausen's disease of bone

- Common in primary hyperparathyroidism
- Due to excessive parathyroid hormone causes osteoclast activation & generalized bone resorption → bone destruction



Brown tumour

- ☐ Fibrosis and Cyst formation
- ☐ Brown tumour:
masses produced by cystic enlargement of bones with areas of fibrosis, organized hemorrhage and osteoclasts
- ☐ Pathological fracture



Secondary hyperparathyroidism



Aetiology

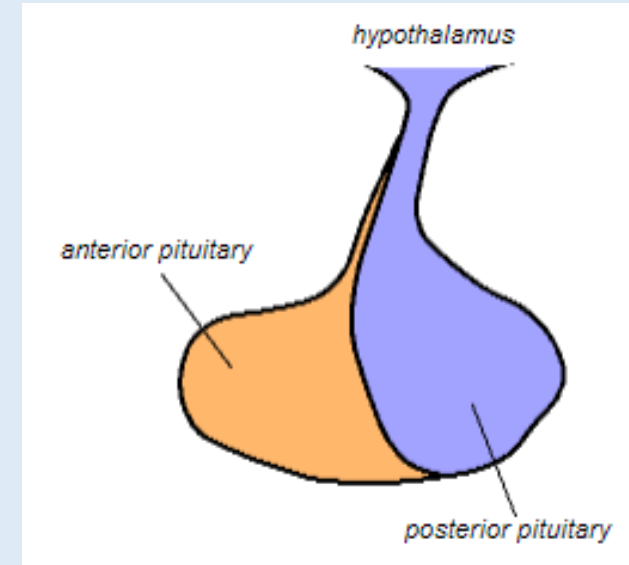
- ❑ Caused by any disease that results in **hypocalcemia** → leading to increased secretion of PTH by the parathyroid glands

- ❑ As in
 - ✓ **Chronic renal failure**
Hypocalcaemia is due to
 - ❑ Decreased renal production of 1,25 (OH)₂ vitamin D.
 - ❑ Decreased phosphorus excretion → **increased serum phosphorus**
(Phosphorus causes hypocalcemia by complexing with serum calcium and depositing it in tissues)

 - ✓ **Vitamin D deficiency**

 - ✓ **Malabsorption**

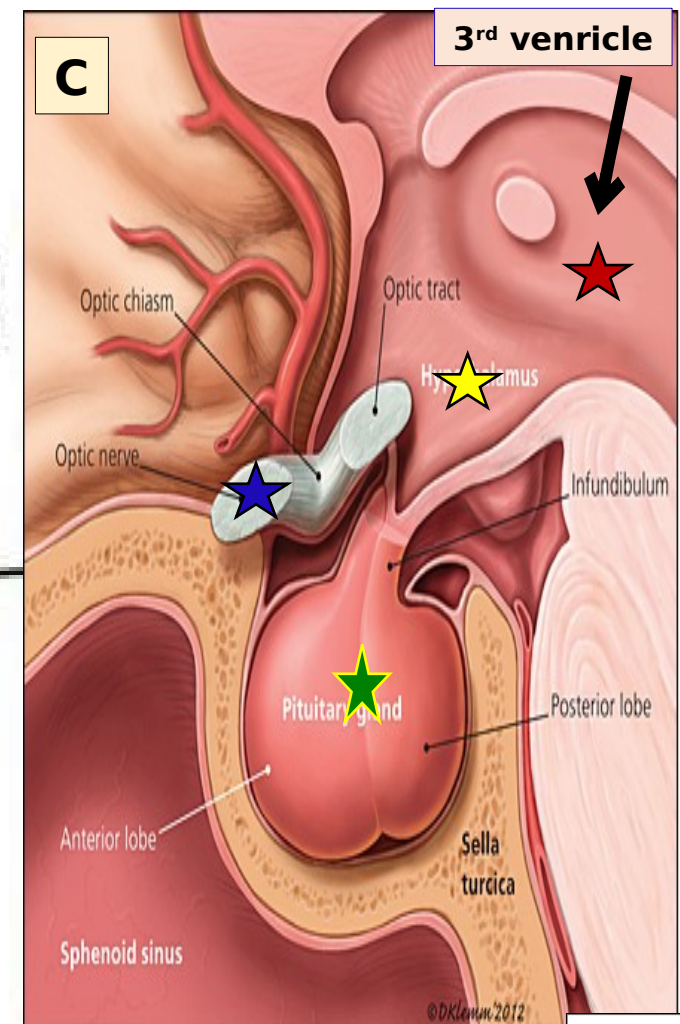
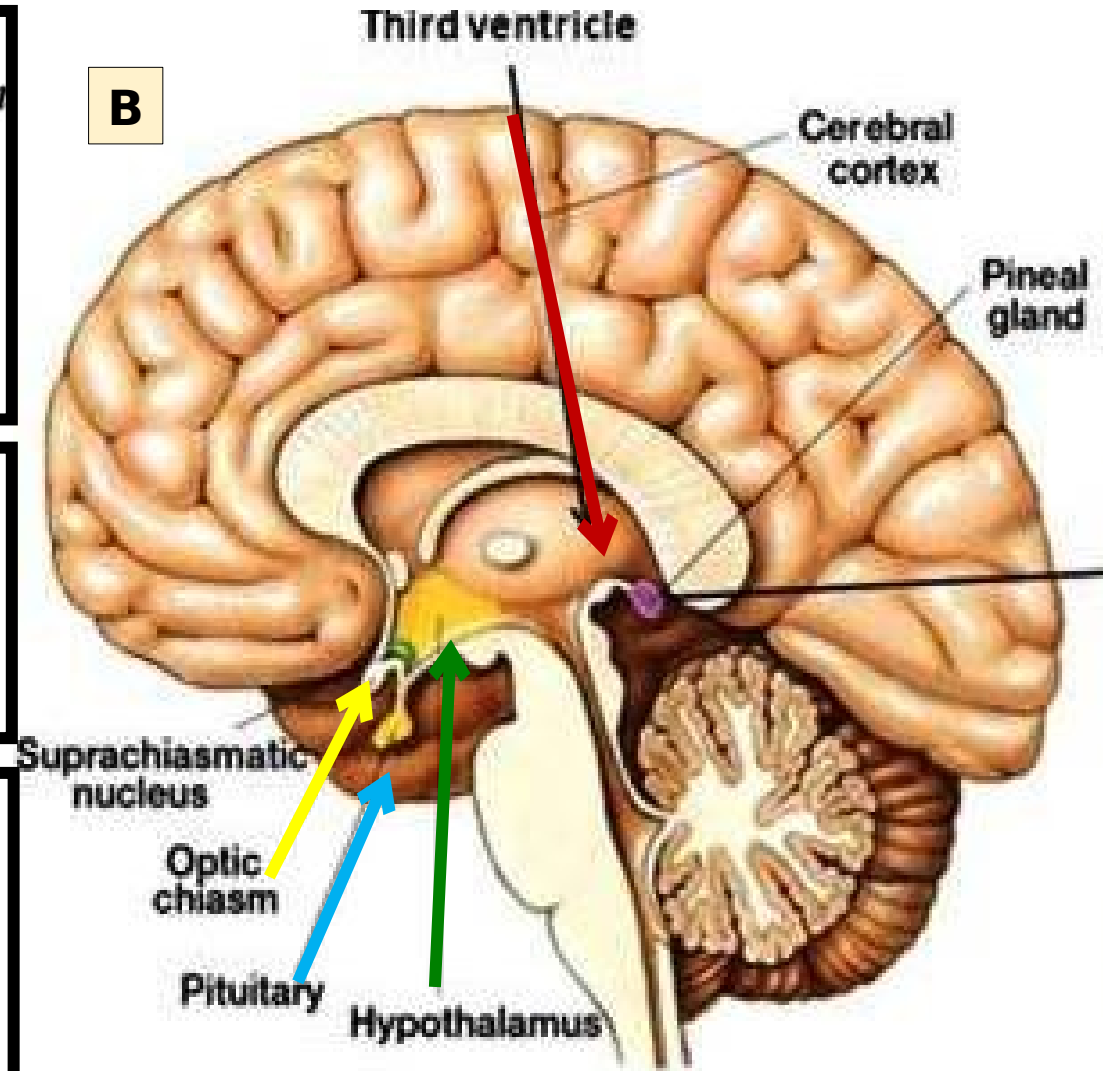
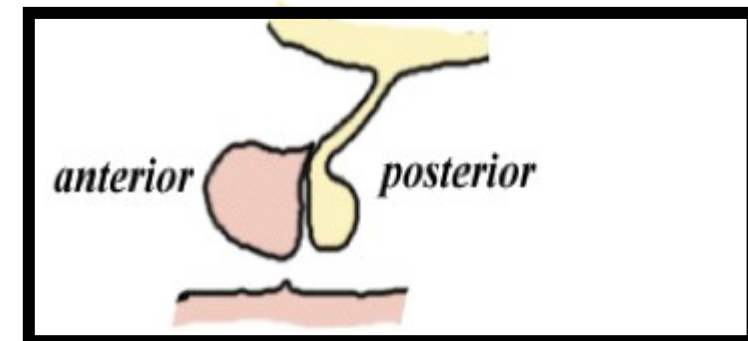
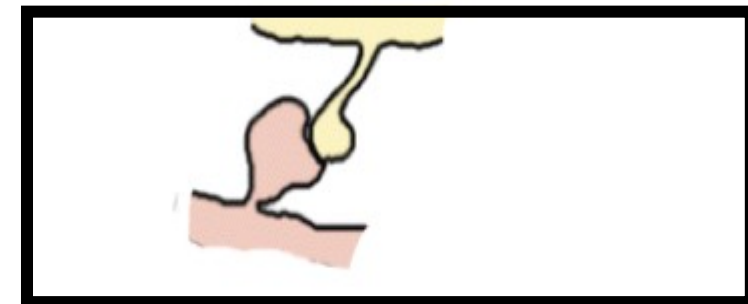
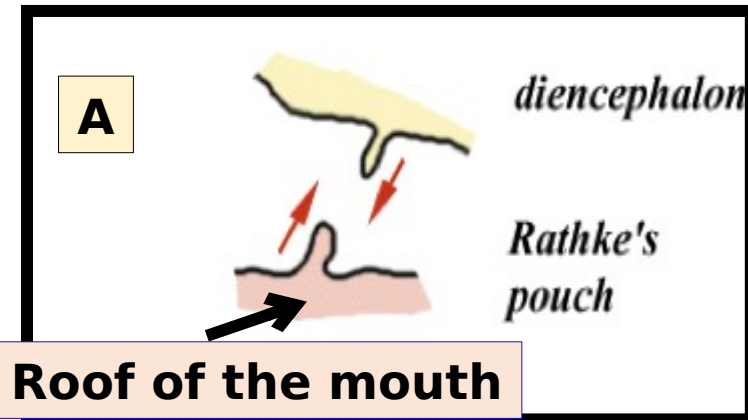




Diseases of Pituitary gland



Pituitary gland



Craniopharyngioma



Definition :

- ❑ Locally malignant tumour
- ❑ Arising from remnants of **Rathke's pouch**
- ❑ in **children**.

Grossly:

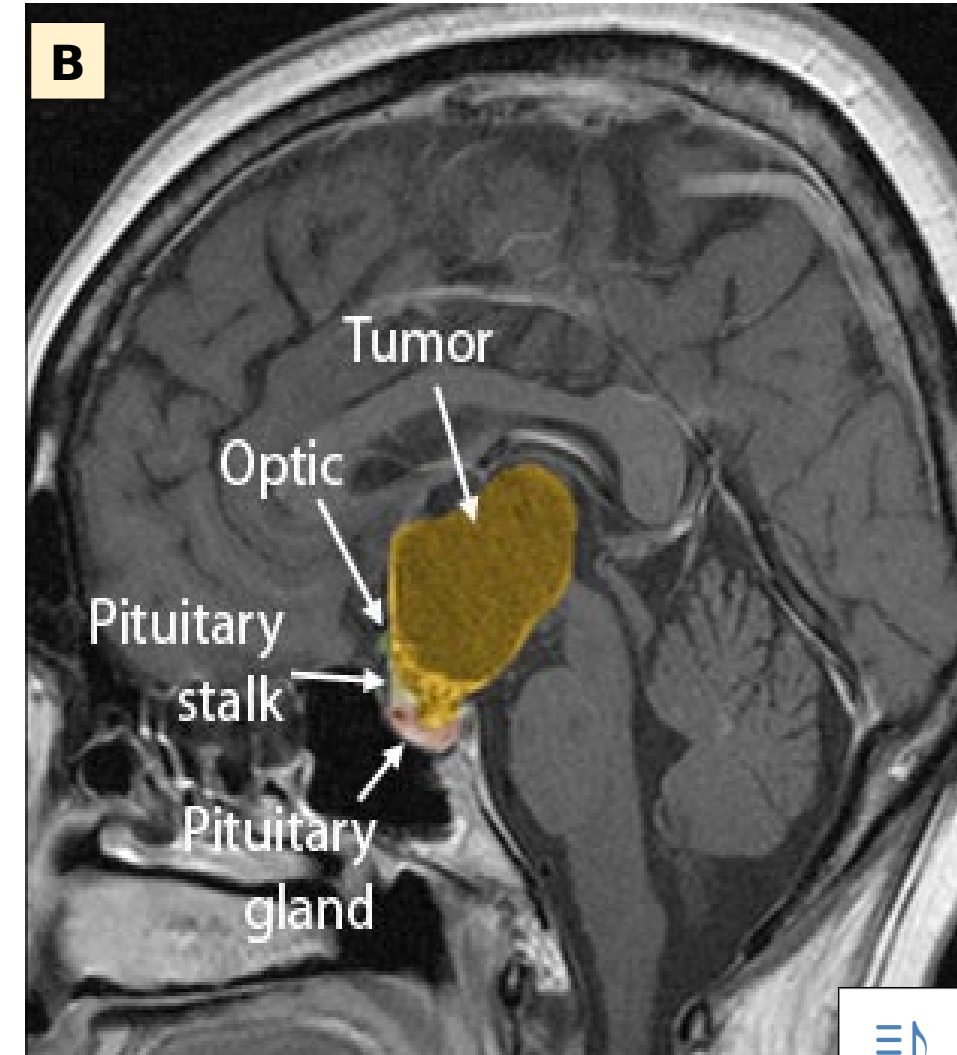
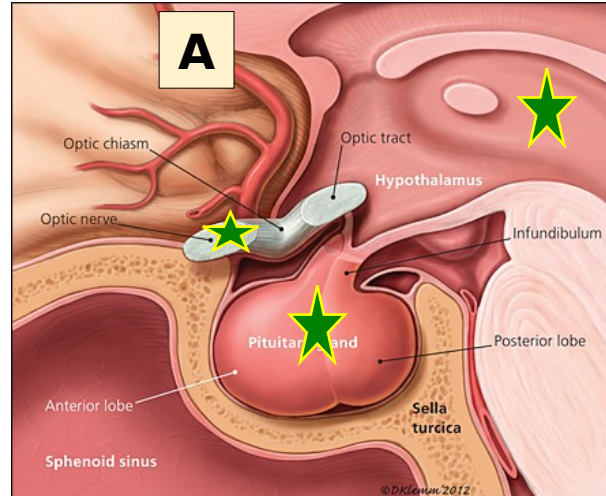
- ❑ **Suprasellar**
- ❑ Noncapsulated
- ❑ Solid or cystic mass
- ❑ With calcifications

Effects: Compression and destruction of:

A. Pituitary gland → hypopituitarism

B. Optic Chiasma → visual field defects

C. Third ventricle → hydrocephalus



Pituitary adenoma



Recent Classification of Pituitary Adenomas:

According to size: a) Microadenoma (<1cm)
b) Macroadenoma(>1cm) cause visual field defects

According to hormone secretion

a)Prolactinoma: →

- Galactorrhea, amenorrhea, infertility

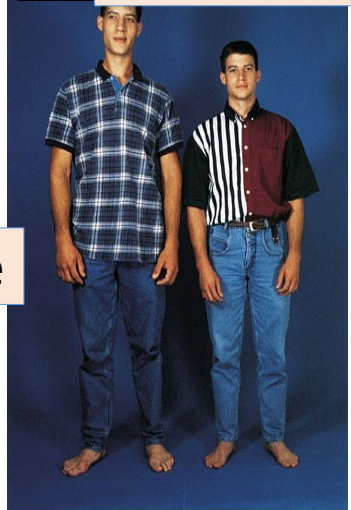
b)Growth hormone secreting adenoma:→

- Gigantism in children
- Acromegaly in adults

c)Adrenal corticotropenoma: (hypersecretion of cortisol) →Cushing disease

[Hypertension, weight gain (truncal obesity, “buffalo hump” & moon facies)]

A Gigantism

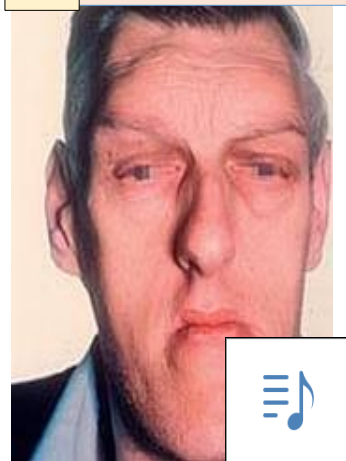


Cushing disease

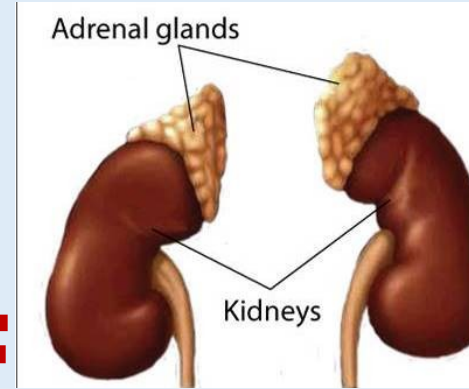
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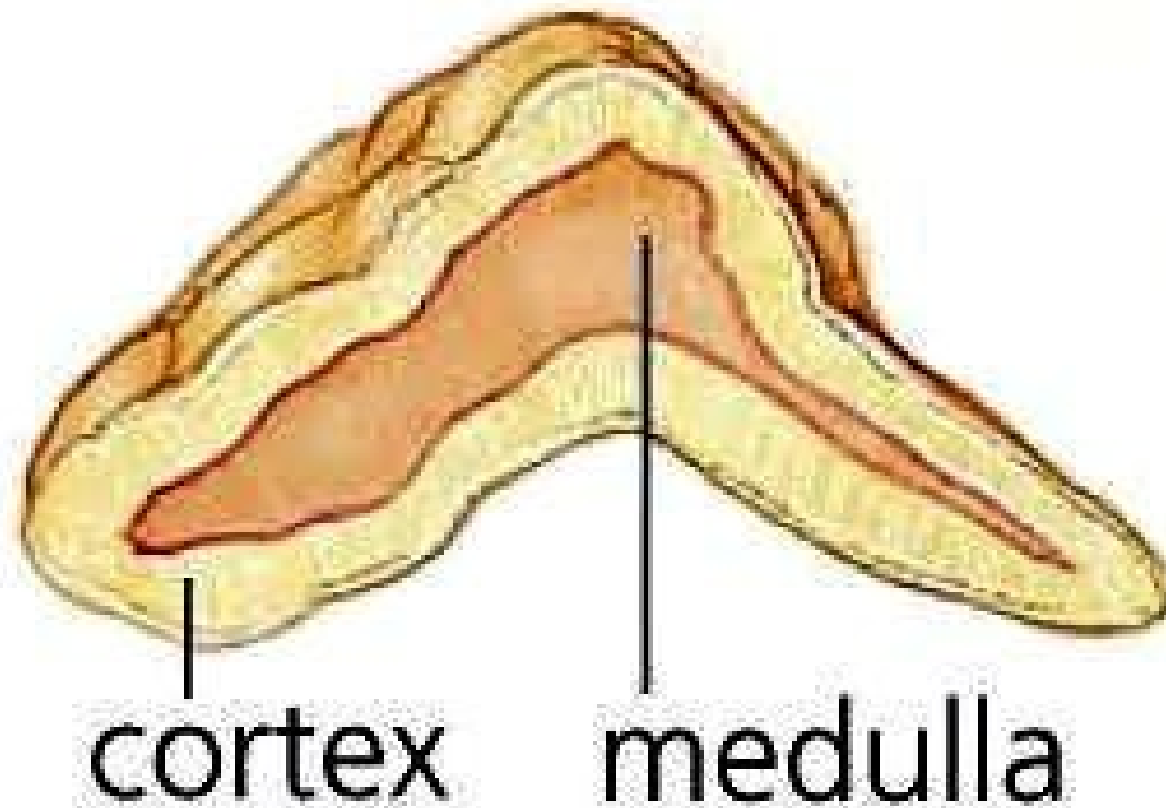
B Acromegaly



Diseases of Adrenal glands



adrenal gland



Tumours of adrenal cortex



1) Epithelial:

A. Benign: Adenoma.

B. Malignant: Carcinoma.

2) Mesenchymal:

C. Benign: as fibroma, lipoma, neurofibroma and hemangioma.

D. Malignant: Sarcomas.

3) Metastatic tumors



Tumours of adrenal medulla



1) Neuroblastoma

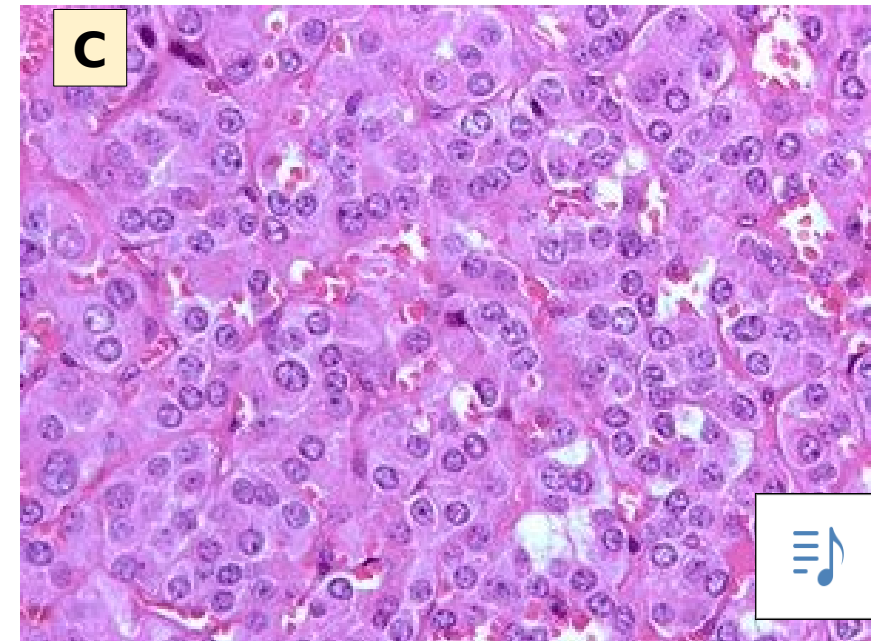
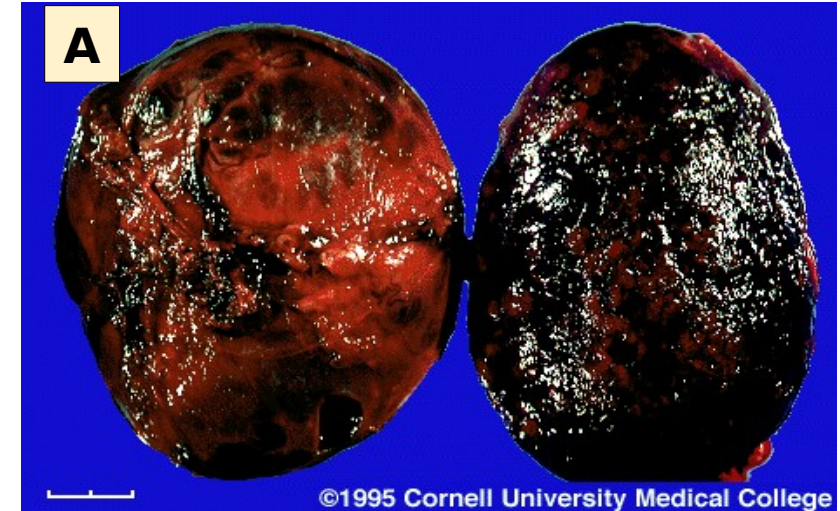
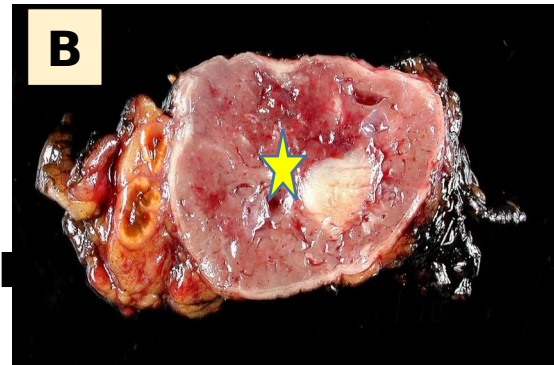
- ❑ A highly malignant embryonic tumor which affects children.
- ❑ Usually under the age of 4 years.

2) Pheochromocytoma

- ❑ Arising from secretory **neuroepithelial cells**

Mic: nests of cells; (**Zellballen**)

- ❑ **Mostly benign** in nature,
- ❑ **10% malignant, 10% bilateral , 10% in children, 10% familial**
- ❑ The tumour secretes catecholamines leading to hypertension, tachycardia,



Suggested books



Robbins basic pathology, Tenth Edition



